

COOPERATIVE LEARNING

IDENTIFYING SIMILARITIES
AND DIFFERENCES

SUMMARIZING AND
NOTE TAKING

REINFORCING EFFORT AND
PROVIDING RECOGNITION

HOMEWORK AND
PRACTICE

NONLINGUISTIC
REPRESENTATIONS

COOPERATIVE
LEARNING

SETTING OBJECTIVES AND
PROVIDING FEEDBACK

GENERATING AND
TESTING HYPOTHESES

CUES, QUESTIONS, AND
ADVANCE ORGANIZERS

Ms. Cimino's middle school class was beginning a unit on the regions of the United States. One of her goals was for students to understand how diverse the regions are. Ms. Cimino explained to students that they would be working in small groups to create a class presentation about a particular region. Each presentation, which would be made in class in two weeks, was to cover the geography, weather patterns, and economic/cultural activities of the region. Ms. Cimino told students that they could use the resources in the classroom, the library, or any of three Internet sites she had identified.

To facilitate the groupwork, Ms. Cimino began by dividing the class into groups of three and assigning a region to each group. Within each group, students agreed who would be the overall leader or organizer, the recorder of the group's discussions, and so on. Each group also decided how they would divide up the work; because there were three students in each group, most groups divided the research into the three areas of focus Ms. Cimino had specified for the presentations. Ms. Cimino encouraged each group to take time every couple of days to evaluate each individual's progress, as well as the group's overall progress; to solve any problems they were encountering; and to fine-tune their work as needed. Ms. Cimino met with each group periodically to monitor their progress, help them solve problems, and help them work together more effectively.

Ms. Cimino used one of the most popular instructional strategies in education—cooperative learning.

Research and Theory on Cooperative Learning

The specific topic of this chapter is cooperative learning. One might view this topic, however, as falling within the more general one of “grouping” strategies. The practice of grouping can be traced back to at least 1867 when educational reformer W. T. Harris initiated a plan in St. Louis, Missouri, that allowed for the rapid promotion of students through the elementary grades. According to Kulik and Kulik (1982), the Harris plan “represented a first step toward ability grouped classrooms” (p. 415). It wasn’t until the turn of the century, however, that a version of grouping was implemented that mirrored current practice. Specifically, in the Santa Barbara Plan, each grade was divided into A, B, and C sections. Although each grade mastered the same basic content, the A group addressed the content in more depth than the B group, who addressed the content in more depth than the C group.

In 1982, Kulik and Kulik noted: “Today, thousands of American schools follow this model of homogeneous grouping” (p. 416). It is probably safe to say that since Kulik and Kulik’s observations in 1982, the practice of forming whole classes on the basis of ability has decreased dramatically. One reason for this might be the relatively small effect size associated with this practice. For

example, in their analysis of 52 studies carried out in secondary schools, Kulik and Kulik found an average effect size of only .10 for ability grouping by class. Another reason for the decline in this practice might be that many educators have made strong claims that ability grouping promotes inequity—in other words, it does little to narrow the gap between the “low ability students and the middle and high ability students” (see Oakes, 1985). Given that in this book we focus only on those instructional variables over which a teacher has control, we are not including in this chapter a discussion of the various ways a school might organize students into homogeneous classes. Rather, the focus of this chapter is the ways a teacher might organize her students within a heterogeneous class.

From the title of this chapter, it is obvious that we recommend the use of “cooperative” grouping strategies. According to David Johnson and Roger Johnson (1999), recognized leaders in the field of cooperative learning, there are five defining elements of cooperative learning:

- ♦ *Positive interdependence* (a sense of sink or swim together).
- ♦ *Face-to-face promotive interaction* (helping each other learn, applauding success and efforts).
- ♦ *Individual and group accountability* (each of us has to contribute to the group achieving its goals).

♦ *Interpersonal and small group skills* (communication, trust, leadership, decision making, and conflict resolution).

♦ *Group processing* (reflecting on how well the team is functioning and how to function even better) [Compiled from the Web site (<http://www.clcrc.com/index.html#essays>) of the Cooperative Learning Center at the University of Minnesota, codirected by Johnson and Johnson].

Figure 7.1 summarizes results from some of the studies that have attempted to synthesize the research in cooperative learning.

Of the studies listed in Figure 7.1, the one most commonly cited is the 1981 study by Johnson and others. Perhaps most

noteworthy about this research synthesis is that it contrasted cooperative learning with several related techniques, three of which are reported in Figure 7.1: intergroup competition, individual competition, and use of individual student tasks. Johnson and colleagues found that cooperative learning groups and groups that engage in intergroup competition produce the same effect on student learning; this is indicated by the .00 effect size when the two are compared—there were no differences in achievement between the experimental and control groups. But cooperative learning has an effect size of .78 when compared with strategies in which students compete with each other (individual com-

FIGURE 7.1
Research Results for Cooperative Learning

Synthesis Study	Focus	No. of Effect Sizes (ESs)	Ave. ES	Percentile Gain
Walberg, 1999	Cooperative learning (general)	182	.78	28
Lipsey & Wilson, 1993	Cooperative learning (general)	414	.63	23
Scheerens & Bosker, 1997	Cooperative learning (general)	—	.56	21
Hall, 1989	Cooperative learning (general)	37	.30	12
Johnson, D., Maruyama, Johnson, R., Nelson, & Skon, 1981	Cooperative learning (general)	122	.73	27
	Cooperative vs. intergroup competition	9	.00	0
	Cooperative vs. individual competition	70	.78	28
	Cooperative vs. individual student tasks	104	.78	28

FIGURE 7.2
Homogenous Grouping Versus No Grouping

Synthesis Study	Focus	No. of Effect Sizes (ESs)	Ave. ES	Percentile Gain
Slavin, 1987	Ability grouping (general)	7	.32	12
Kulik & Kulik, 1987	Ability grouping (general)	15	.17	6
Kulik & Kulik, 1991	Ability grouping (general)	11	.25	10
Lou et al., 1996	Ability grouping (general)	103	.17	6
	Low-ability students	24	.37	14
	Medium-ability students	11	.19	7
	High-ability students	18	.28	11

petition). Finally, cooperative learning has an effect size of .78 when compared with instructional strategies in which students work on tasks individually without competing with one another (individual student tasks). In general, then, organizing students in cooperative learning groups has a powerful effect on learning, regardless of whether groups compete with one another.

Three generalizations can be used to guide the use of cooperative learning:

1. Organizing groups based on ability levels should be done sparingly. One of the more controversial aspects of organizing students in groups (whether they be cooperative groups or otherwise) is whether the groups should be homogeneous—organized by ability levels. In general, homogenous grouping seems to have a positive effect on student achievement when compared with no grouping. Figure 7.2 reports results from some of the synthesis studies.

Of great importance to this discussion are the Lou and others (1996) findings that students of all ability levels benefit from ability grouping when compared with no grouping at all. Equally important, however, are the findings reported in Figure 7.3, which shows the results from studies that compared homogeneous versus heterogeneous grouping.

As shown in Figure 7.3, students of low ability actually perform worse when they are placed in homogeneous groups with students of low ability—as opposed to students of low ability placed in heterogeneous groups. This is evidenced by the negative effect size of $-.60$. In addition, the effect of homogeneous grouping on high-ability students is positive but small (.09). It is the medium-ability students who benefit the most from homogeneous grouping ($ES = .51$). Grouping students by ability, then, might have very different effects on different students—the experience of stu-

FIGURE 7.3
Homogeneous Versus Heterogeneous Grouping

Ability Level of Students	No. of Effect Sizes (ESs)	Ave. ES	Percentile Gain ^a
Low ability	4	-.60	-23
Medium ability	4	.51	19
High ability	5	.09	3

^a Data from Lou et al., 1996.

dents in the low-ability group might be quite different from that of the experience of students in the middle- and high-ability groups (Webb, 1982).

2. Cooperative groups should be kept rather small in size. This generalization might appear obvious, but it is certainly worth mentioning. Specifically, Lou and others (1996) reported the effect sizes shown in Figure 7.4.

These findings led Lou and colleagues to recommend: "Small teams of three to four members seem more effective than larger groups" (1996, p. 451).

3. Cooperative learning should be applied consistently and systematically, but

not overused. Cooperative learning is an instructional strategy that works best when applied systematically. In fact, Lou and colleagues (1996) report that grouping strategies are most effective when applied at least once a week. Some psychologists, however, warn against the "overuse" of cooperative learning. Specifically, researchers John Anderson, Lynne Reder, and Herbert Simon (1997) warn that cooperative learning can be misused and is frequently overused in education: it is *misused* when the tasks given to cooperative groups are not well structured; it is *overused* when it is implemented to such an extent that students have an insufficient amount of time

FIGURE 7.4
Size of Groups

Group Size	No. of Effect Sizes (ESs)	Ave. ES	Percentile Gain
Pairs	13	.15	6
3-4	38	.22	9
5-7	17	-.02	-1

to practice independently the skills and processes that they must master.

Classroom Practice in Cooperative Learning

Using a Variety of Criteria for Grouping Students

When considering how to group students, remember that Generalization 1 suggests that *ability* grouping should be used sparingly. Indeed, students can be grouped according to interest, according to their birthday month, according to the colors they are wearing, alphabetically, or even randomly by picking names from a hat. To maximize students' experience, it is probably a good idea to use a variety of criteria, as well as to adhere to the tenets of cooperative learning, to make the experience successful. Kagan (1994) suggests a variety of group structures. The following example describes the perspective of a student who experienced different types of cooperative learning groups.

Tommy had not been happy when he heard that in 4th grade science the students would be working in groups all year. Most of his experience with groups was in math, where he was always in what he called "the math for dummies" group. He hated it. But, as he listened to the science teacher, he began to understand how these groups would be formed and how often they would change. First, the teacher explained that they would be in

groups about half of the time only. Then she explained that for the first unit, they would be placed in groups based on the type of pets they had. This would give them some common experiences on which to build discussions of animals and their habits. If too many students had the same pets, such as a dog and a cat, or if only one student had a pet, for example, an iguana, they would mix and match until the groups were small but shared some common experiences with animals. Tommy decided groups might be okay, after all.

Informal, Formal, and Base Groups

One way to vary the grouping patterns within a class is to use the three types of cooperative learning groups identified by Johnson and Johnson (1999)—informal, formal, and base groups. Informal groups (e.g., pair-share, turn-to-your-neighbor) are ad hoc groups that last from a few minutes to a class period. They can be used to clarify expectations for tasks, focus students' attention, allow students time to more deeply process information, or to provide time for closure. The following example depicts how a teacher might use informal groups of two while reading to students.

Mr. Anderson likes to read aloud original source documents about slavery to his 5th graders. After reading for 10 minutes, he gives the students a discussion task to complete in pairs for 3–4 minutes. The task requires students to answer a specific question that he provides. After each member of a pair formulates a response and discusses it with his partner, Mr. Anderson begins to read aloud again. After 10 minutes, Mr. Anderson

stops and asks students to complete a second paired discussion task. Occasionally, he asks two or three pairs to share a brief summary of their discussions. At the end of the class, Mr. Anderson asks the paired students to summarize what they have learned from the readings and discussions in written form and turn their summaries in to him.

Formal groups are designed to ensure that the students have enough time to thoroughly complete an academic assignment; therefore, they may last for several days or even weeks. When using formal groups, the teacher designs tasks to include the basic cooperative learning components:

- ◆ Positive interdependence.
- ◆ Group processing.
- ◆ Appropriate use of social skills.
- ◆ Face-to-face promotive interaction.
- ◆ Individual and group accountability

(Johnson & Johnson, 1999).

The following example shows the use of formal groups in the context of a complex task.

Ms. Randall begins her high school economics lesson on trade and consumers by asking her 32 students to form eight groups of 4 by counting off from 1 to 8. The group members are each assigned a role: recorder, summarizer, technical advisor, and researcher. Each group is given the task of creating a product, using specific guidelines she has provided them. Over the course of four days, the students will work together to decide on a product, design it, and create a marketing display. They will try to sell their products to the other teams. Ms. Randall sys-

tematically monitors individuals and groups for social skills, problem-solving strategies, and group processing. She often asks students to self-assess on specific skills. In the final presentation of the product, students must demonstrate their individual contributions, as well as the accomplishments of the group as a whole.

Base groups are long-term groups (e.g., for the semester or year) created to provide students with support throughout a semester or an academic year. The following example shows the use of base groups in a 3rd grade class.

When Mrs. Ramos told Mr. Stalls that it was the fourth week of school and she noticed that her 3rd graders still didn't know each other by name, he suggested that she create base groups. She had heard of using base groups before to accomplish routine tasks and provide support for students, but thought they were useful for older students only.

After she organized students into base groups, she asked them to take a few minutes to exchange phone numbers and share any schedule information that they should know about each other (e.g., soccer practices, piano lessons, and scouting). She explained that each day they would meet in their base groups for five minutes to greet each other, check to make sure homework was turned in, and sign up for lunch choices. At the end of the day, they would also meet to review homework assignments and help each other with classroom chores.

Over the course of the year, the students stayed in these base groups. In addition to completing routine tasks, the base groups planned activities, ran errands (e.g., collecting all of the class library books and taking them to the media center on a cart), and had fun (e.g., teams on the field day). As a result of

the base groups, Mrs. Ramos noticed a difference in the students' general sense of belonging to the class.

Managing Group Size

As described in Generalization 2, cooperative groups should be kept small. Although a given task may appear suited to a large group, students may not have the skills to work competently in a large group. Many teachers suggest that the rule of thumb is "the smaller the better." However, sometimes resources may dictate the use of bigger groups. One of the management tasks for a teacher is to continually monitor the size of the groups he is using, making changes when warranted.

Mr. Eden's students were in the media center working on their Constitution projects. Steve asked if he could talk for a few minutes about their group because it wasn't working very well. "There is definitely enough to do and we understand the assignment, but there are just too many of us," he said. Mr. Eden watched the group for a while and realized that Steve was right. That afternoon, Mr. Eden reorganized the students into triads, instead of groups of six. It took some extra time to rearrange the tasks and reassign the work, but in the long run, he realized that he had complicated the task for students by using groups that were too large.

Combining Cooperative Learning with Other Classroom Structures

Even teachers who are extremely committed to using cooperative learning groups

would agree with Generalization 3, that cooperative learning can be overused. Any strategy, in fact, can be overused and lose its effectiveness. The following example describes the experience of a teacher who had to be reminded of this.

Ms. Mandrell was a cooperative learning zealot and a master at using it in her 8th grade class. She, therefore, could not figure out why lately it seemed the groups in her class were not getting along and were not as productive as she had observed earlier in the year. She had even tried allowing students to select their own groups, a practice she rarely used, but this did not seem to help.

Finally, during group processing, she shared her observations with the students. One student helped identify the problem, "We need some alone time. I'm tired of interacting all the time. I need to have more time to just think and work quietly."

Other students chimed in, "We like to work with each other, but not so much. I learn some things better on my own."

Ms. Mandrell heard the message. "You're right. I get obsessive when I like something and I like cooperative learning. But keep reminding me if I get carried away again. I promise I'll listen."



Of all classroom grouping strategies, cooperative learning may be the most flexible and powerful. As the examples in this chapter illustrate, teachers can use cooperative learning in a variety of ways in many different situations.